

REMARKS/ARGUMENTS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 3, 4 and 6-9 are presently pending in this application, Claims 3 and 6-9 having been withdrawn from further consideration by the Examiner.

In the outstanding Office Action, Claim 4 was rejected under 35 U.S.C. §102(b) as being anticipated by Goswami et al. (U.S. Patent 5,687,706).

Before addressing the outstanding art rejection, a brief summary of Claim 4 according to the present invention is believed to be helpful. Claim 4 is directed to a heat storage device including a heat storage tank charged with a heat transfer medium which also serves as a heat storage material for storing the heat supplied from the outside, a heat transport device which execute an injection and an extraction of heat between the inside of the heat storage tank and the outside by the inflow and the outflow of the heat transfer medium, the heat transport means being disposed so as to execute a heat transport between the central portion in the heat storage tank and the outside, and suppressing means for suppressing the natural convection of the heat storage material, the suppressing means being disposed in the outer portion in the heat storage tank. By providing such suppressing means, the heat storage material develops the natural convection in the central portion but not in the outer portion of the storage tank, thereby reducing the temperature difference between the surface of the heat storage material and the external environment. As a result, the heat storage device recited in Claim 4 effectively reduces the influence of the external environment upon the inside portion of the heat storage tank and the heat loss toward the outside is significantly suppressed.

The outstanding Office Action asserts that Goswami et al. disclose a heat storage device as recited in Claim 4. However, it is respectfully submitted that Goswami et al. do not teach "suppressing means for suppressing the natural convection of the heat storage material,

said suppressing means being disposed in the outer portion in the heat storage tank" as recited in Claim 4. Specifically, Goswami et al. disclose a method in which a highly viscous heat medium is used to suppress vertical thermal convection in the Goswami et al. heat storage tank but not radial convection and heat transfer, because according to Goswami et al., the heat storage materials must be uniformly heated and thus efficiently utilized.¹ Furthermore, the Goswami et al. heat storage tank simply discloses a "lower portion" and an "upper portion," and according to Goswami et al., the "viscous liquid" serves as a heat transfer medium.² Also, the Goswami et al. heat storage tank is designed such that the "lower portion" produces more heat than the "upper portion," thereby requiring these two distinctive portions.³ Applicant further wishes to point out that the Goswami et al. heat storage tank stores heat by utilizing "PCM pellets," not "viscous liquid,"⁴ as a heat storage material, and the "PCM pellets" are comprised of high density polyethylene; trisodium phosphate dodecahydrate and sodium hydroxide; or aluminum ammonium sulfate dodecahydrate and calcium fluoride.⁵ Some of these materials effloresce and/or deliquesces, but none of them are liquid-absorbent. Accordingly, Goswami et al. are not believed to disclose dispersion of an absorbent material in the heat storage material. Additionally, Goswami et al. require the viscous fluid as having a high heat transfer characteristic and non-toxic for water heating applications, and disclose only propylene glycol as such a material.

does not claim that

Based on the discussions presented above, Applicant respectfully submits that the structure recited in Claim 4 is believed to be clearly distinguishable from Goswami et al., and thus is not anticipated thereby.

¹ See Goswami et al., column 5, lines 15-23.

² See id., Abstract.

³ See id., column 3, lines 23-36.

⁴ See id., column 3, lines 35-36.

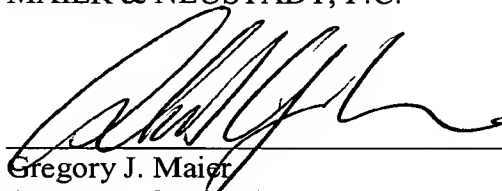
⁵ See id., column 3, lines 36-43.

For the foregoing reasons, Claim 4 is believed to be allowable. Furthermore, since Claims 6-9 depend from Claim 4, substantially the same arguments set forth above also apply to these dependent claims. Hence, Claims 6-9 are believed to be allowable as well.

In view of the discussions presented above, Applicant respectfully submits that the present application is in condition for allowance, and an early action favorable to that effect is earnestly solicited.

Respectfully submitted,

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